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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/784,591

02/23/2004

Charles Black

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EXAMINER

GOODWIN, DAVID J

ART UNIT

PAPER NUMBER

2818

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/784,591	<b>Applicant(s)</b> BLACK ET AL.	
	<b>Examiner</b> DAVID GOODWIN	<b>Art Unit</b> 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20,24,35,37,50,51 and 53-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20,24,35,37,50,51 and 53-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 53 is rejected under 35 U.S.C. 102(b) as being anticipated by Chivukula (US 6,066,581).
2. Regarding claim 53.
3. Chivukula teaches a dielectric layer. Said layer is lead zirconate titanate and has a dielectric constant greater than 10 (column 13 lines 15-25). Said layer comprises particles having a diameter between 10 and 15 nm and a uniform size (column 15 lines 1-10). Particles having a uniform size would have a standard deviation of 0%. As the surfactant is removed from the layer, said material does not form part of the layer.
4. Note that a “product by process” claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

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a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

1. Claims 20, 24, 35, 37, 50, 51, 53, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 2002/0137260) in view of Matijevic (US 5,900,223).
2. Regarding claim 37
3. Leung teaches a dielectric layer. Said dielectric layer consists of nanoparticles have a 2nm diameter and having a monodisperse size distribution, which is less than 5% standard deviation (paragraph 0021). The nanoparticles may be coated with a surfactant (paragraph 0021).
4. Leung does not teach the dielectric constant of the material.
5. Matijevic teaches barium titanate nanoparticles (column 12 lines 30-45). Barium titanate has a dielectric constant higher than 10.
6. It would have been obvious to one of ordinary skill in the art to use barium titanate nanoparticles in order to make advanced and superior products which have nanoparticles having good sinterability, dense packing, fine grained structure, and a high dielectric constant further the powders have great usefulness in many applications including dielectrics..

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7. Note that a “product by process” claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

8. Regarding claim 50.

9. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. “Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation”. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g.,

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Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

10. Regarding claim 51.

11. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

12. Regarding claim 20.

13. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are

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critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

14. Regarding claim 35

15. Differences in percentages will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such percentages are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454,456,105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the percentages, and this percentages has been used in similar devices in the art (see, e.g., Matijavic column 7 lines 40-50) it would have been obvious to one of ordinary skill in the art to use these values in the device.

#### CRITICALITY

16. The specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim,

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the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

17. Regarding claim 53.

18. Leung teaches that the surfactant is not added (paragraph 0021).

19. Regarding claim 54.

1. In an embodiment where the functional groups are removed from the surface of the nanoparticle note that a “product by process” claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

a. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*. 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

20. Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

21. Regarding claim 55.

22. Leung teaches that the solvent is removed (paragraph 0023).



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2. Note that a “product by process” claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

b. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

23. Regarding claim 24

24. Matijev teaches that the particles are barium titanate.

25. It would have been obvious to one of ordinary skill in the art to use barium titanate nanoparticles in order to make advanced superior products which have nanoparticles having good sinterability, dense packing, fine grained structure, and a high dielectric constant.

26. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 2002/0137260) in view of Matijev (US 5,900,223) as applied to claim 37 and further in view of Yokouchi (US 5,143,637).

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27. Regarding claim 54
28. Leung in view of Matijev teaches elements of the claimed invention above.
29. Leung in view of Matijev does not teach the composition of the surfactant.
30. Yokouchi teaches a particle surfactant comprising a carboxyl group (column 5 lines 25-35).
31. It would have been obvious to one of ordinary skill in the art to coat the particles with carboxyl groups in order to increase the dispersion of the particles.

### ***Response to Arguments***

1. Applicant's arguments filed 3/29/2010 have been fully considered but they are not persuasive.
2. The applicant argues that that Chvukula does not teach coating the nanoparticles with surfactant and said surfactant coating critically distinguishes the claimed invention from the prior art.
3. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., surfactant coating) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).
4. The applicant will note that claim 53 does not state the dielectric layer comprises surfactant coated particles but rather said surfactant coating is part of the process used to deposit a layer of particles into an aggregated layer. As is made clear in the applicant's specification said surfactant may be removed (paragraph 9).

The applicant's argument that the surfactant coating prevents aggregation of the nanoparticles in the dielectric layer is flawed because, as is shown in the applicant's figures 9, 10, 19, 20, 23, and 24), the particles aggregate when the solvent is removed. Clearly the surfactant is not preventing aggregation of the nanoparticles in the aggregated nanoparticle dielectric layer. As noted previously, process steps must distinguish the product rather than the process (and constituent intermediate structures) of making the product.

Note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in *Thorpe*,

c. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir 1935).

Note that Applicant bears the burden of proof in such cases as the above case law makes clear.

5. The applicant argues that the examiner must make a searching comparison of the claimed invention, including a limitations, with the prior art.

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6. The applicant will note that the examiner made a searching comparison of the claimed invention, including a limitations, with the prior art. Said comparison resulted in the rejection, including motivation and reasoning, dated 12/28/2009.
7. The applicant argues that motivation for using BaTiO<sub>3</sub> as the nanoparticles is insufficient.
8. The applicant will note that the motivation derives from the Matijevic reference that teaches that barium titanate particles are used to make advanced devices of superior quality.
9. The applicant argues that it is evident that the claimed invention differs from the references of record.
10. The applicant does not explain or imply how the claimed invention differs.
11. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID GOODWIN whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

djg

/STEVEN LOKE/

Supervisory Patent Examiner, Art Unit 2818